Digital Media

INSTRUCTORS

Zachary Wong zacharywong@cuhk.edu.hk

ISSUE

Digital Media - a means to an end or an end itself?

DESCRIPTION

Architecture has due to digital media reached another epoch undefined by styles and methods historically. The course offers students an introduction to the context and debates around digital media.

The course introduces students to the principles of algorithmic design, giving an overview of applications across different scales and stages, focusing on the underlying logic rather than specific software.

IMPACT AND SUSTAINABILITY

Students will be equipped with necessary understanding and knowledge of the era of algorithm, allowing them to explore and develop their own point of view of the impact of digital media towards architecture.

Construction contributes to 40% of carbon emission. With the assistance of digital media, students are given the ability to accurate represent their design and construction process, and simulate for a sustainable design.

METHODS

Assignment 1: Group project: Students will form group of 3-4, to explore fabrication process in the digital era. Students will realise the design from sketches to 3D model, and finally fabricate the product by 3D printing or laser cut. Tutorial sessions will be held to explore together with students in the process. Students are also encouraged to make use of visualisation/simulation tool to design the product. The final product will be presented altogether and students will be invited as the judge.

Assignment 2: Reimagine your project: each student will base on their school project to reimagine with AI tools under a totally different settings.

Assignment 3: BIM your project: Each student is required to represent their school project in BIM. Tutorial sessions will be held to explore together with students in the process. Documentation in form of drawings and visualisations should be generated from the BIM model. The final drawings will be documented in the portfolio for final grading.

GUEST LECTURES

1. Digital simulation in building design
2. Artificial and architectural intelligence

DELIVERABLES

For each assignment :

- 200 – 300 words to describe concepts, observations, and feedback

- Design intent sketches / photos of parti model
- Screenshots of process in the digital environment

Assignment 1:
- Observation and photos of the fabrication process (failed and success)
- Photos of the final product

Assignment 2:
- Screenshots of script/ Prompts used for generation of image
- At least 3 images of AI generated images of interior and exterior

Assignment 3:
- Screenshots of the BIM model
- Plans showing all floors of the design
- At least 2 sections and 2 elevations
- At least 3 images of visualisations of interior and exterior

LEARNING OUTCOMES

The course has the following overall aims:

- Students should be able to develop insights in the adoption and integration of different applications for different situations.
- Students should be able to develop their own understanding of the impact of digital media to architecture.
- The course will form an integral part with the studio course, pushing students to experiment in a self-driven way to explore the digital media, and understand the extent and limits of the tools and personal abilities.

ASSESSMENT SCHEME

SPECIFIC ASSESSMENT

Specific assessment methods/tasks	**% weighting**
Attendance	*5%*
Final Portfolio	
- *Assignment 1*	*45%*
- *Assignment 2*	*5%*
- *Assignment 3*	*45%*

Total: 100%

COURSE FORMAT

1_Teaching Days

1. Students must attend for F2F teaching during these teaching hours.
   Teaching Day:7/1, 14/1, 21/1, 4/2, 11/2, 18/2, 25/2, 11/3, 18/3, 25/3, 1/4, 8/4, 11/4
2. Teaching Venue: G01, LSK Architecture Building

3. Field trips, lectures, and other learning activities may be scheduled outside of teaching days.

2_Student Study Effort (Total: 300 hrs)

1. Class Contact: 40 hrs (Lecture, Tutorial)
2. Other Student Study Effort: 80 hrs (Self Study, Assignment)

REQUIRED READINGS

Terzidis K., Algorithmic Architecture, Spon Press, 2003, pp.67-76.

RECOMMENTED

The Foundations of Digital Architecture - Peter Eisenman, curated by Grey Lynn
https://www.youtube.com/watch?v=hKCrepgOix4&list=PLc8G6VsNd6otT9I13OLeUzsd1fYI2Fnxc&index=6

Organic algorithms in architecture – Greg Lynn
https://www.ted.com/talks/greg_lynn_organic_algorithms_in_architecture?subtitle=en

Parametric Order—21st Century Architectural Order - Patrik Schumacher
https://www.youtube.com/watch?v=zG2WMVkD5dw&list=PLc8G6VsNd6otT9I13OLeUzsd1fYI2Fnxc&index=7

Merging Intelligences - Immanuel Koh, Cristóbal Valenzuela & Jeffrey Huang
https://www.youtube.com/watch?v=rC5Awk81h04&list=PLc8G6VsNd6otT9I13OLeUzsd1fYI2Fnxc&index=8

How AI changes architecture as we know it
https://open.spotify.com/episode/3fjbgoUMltDw1HIcP0dMgQ?si=sEM0WsW6Rgy1arwdyqYqkQ&t=288&context=spotify%3Ashow%3A7H7IyhEmhklACqYrUyyZa0

OTHER REFERENCES

Archistar Academy : https://www.archistar.ai/

Sketchup Tutorials : https://learn.sketchup.com/collections/courses

Rhino and Grasshopper Tutorials: https://academy.archistar.ai/

ArchiCAD Tutorials : https://learn.graphisoft.com/

Adobe Creative Suite Tutorials : https://helpx.adobe.com/learning.html

Education license :

ArchiCAD : https://community.graphisoft.com/t5/Licensing/Educational-License-Step-by-step/ta-p/343590

Twinmotion : https://twinmotionhelp.epicgames.com/s/article/Twinmotion-Educational-version?language=en_US

IMPORTANT NOTE TO STUDENTS

Expectations for Professional Conduct
The motto of The Chinese University of Hong Kong (CUHK) is "Through learning and temperance to virtue". This motto places equal emphasis on the intellectual and moral education of students. In addition to pursuing academic excellence, students of CUHK are expected to maintain and uphold the highest standard of integrity and honesty in their academic and personal lives, respect the rights of others and abide by the law. More information on Postgraduate studies can be found in the PG Student Handbook. https://www.gs.cuhk.edu.hk/

Attendance
Class attendance is required in all courses. For an excused absence, the instructor must be notified and presented with documentation of illness or personal matter. Please note: **Three (3)** or more unexcused absences may result in a failing grade for the course.

Academic Honesty
The Chinese University of Hong Kong places very high importance on honesty in academic work submitted by students and adopts a policy of zero tolerance on academic dishonesty

Attention is drawn to University policy and regulations on honesty in academic work, and to the disciplinary guidelines and procedures applicable to breaches of such policy and regulations. Details may be found at: http://www.cuhk.edu.hk/policy/academichonesty/.

With each assignment, students may be required to submit a statement that they are aware of these policies, regulations, guidelines and procedures.

Third-Party Assistance
All intellectual work essential to the design project must be completed by the student and cannot, under any circumstance, be outsourced to a third party (including, but not limited to a company, consultant, alumni, and/or friend).

In the design studio context, students may utilize external resources, such as printing services for presentation materials, and/or laser cutting and 3D printing services for prototyping purposes. Use of such third-party services constitutes non-intellectual work done by others. It is only permitted with prior written consent from the studio tutor and acknowledgment of such work done by the third party.

Assistance from other students or friends for aspects of project production also constitutes non-intellectual work done by others; this is allowed only if declared and acknowledged in a written statement attached to any such work that has received assistance.

Under all circumstances, students must declare all work done by others by completing the school's designated form before assessment. This form must include a detailed explanation of the third party's identity (name and relationship to the student), when and how they were utilized, and the specific tasks they performed in the project. The completed form, signed by the student, must be endorsed by the tutor

and presented during the final review. The school will collect and retain this form for record-keeping purposes.

Failure to follow this code of conduct may be considered a case of academic dishonesty, to be reviewed by a disciplinary board, and possible failure of the course.

Artificial Intelligence
Unless approved by the Programme or School Director, any use of AI tools such as ChatGPT or image generation tools (Midjourney) etc. is strictly prohibited and may result in disciplinary action in accordance with university policy on academic honesty. Students may refer to the CUHK 'Use of Artificial Intelligence tools in Teaching, Learning and Assessments' – A Guide for Students.

Student Work
Submission of studio documentation must be complete and correctly formatted. Missing or incomplete submission of the documentation folder will result in the grade for the course being withheld. This will prevent registration for the following term or delay graduation. In addition, a grade deduction of one letter grade will be made.

SCHEDULE

Important Dates

Assignment 01 4 MAR 2024 (TUE)
Assignment 02 18 MAR 2024 (TUE)
Assignment 03 22 APR 2024 (TUE)
Final Portfolio 22 APR 2024 (TUE)

Term 2: 6 January 2025 (Monday) – 17 May 2025 (Friday)

WEEK 19		
07.01	**Lecture**	Introduction to Digital Media
WEEK 20		
14.01	**Lecture and tutorial**	Algorithmic architecture Application: Rhino
WEEK 21		
21.01	**Lecture and tutorial**	3D Modelling Techniques Application: Rhino
WEEK 22		
28.01	**HOLIDAY**	Chinese New Year
WEEK 23		
04.02 06.02	**HOLIDAY** **REVIEW 01**	Paradigm shift of manufacture industry Application: Rhino (Grasshopper)
WEEK 24		
11.02	**Tutorial**	Group tutorial for assignment 1 (1)
WEEK 25		
18.02	**Tutorial**	Group tutorial for assignment 1 (2)
WEEK 26		
25.02	**Guest Lecture**	Artificial and architectural intelligence
WEEK 27		
04.03	**READING WEEK** **ASSIGNMENT 01**	
WEEK 28		
11.03 13.03	**Lecture and tutorial** **REVIEW02**	Introduction to BIM Modelling Technique I Application: ArchiCAD
WEEK 29		
18.03	**Guest Lecture** **ASSIGNMENT 02**	Digital Simulation in Design
WEEK 30		
25.03	**Lecture and tutorial**	Introduction to BIM Modelling Technique II Application: ArchiCAD
WEEK 31		
01.04	**Lecture and tutorial**	Introduction to BIM Modelling Technique III Application: ArchiCAD
WEEK 32		
08.04	**Lecture and tutorial**	Visualisation

		Application: Twinmotion
WEEK 33		
14.04	**FINAL REVIEW**	Year 2
WEEK 34		
22.04	**ASSIGNMENT 03**	Final Portfolio

Academic Honesty Statement

*Please print out and pin-up next to your works on your allocated panels

Relating to the 2024-25 Studio Review pin-up (BSSc students)

Please tick one of the following:

☐ All the work and models presented at the Final Review were made by me personally

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with the exception of the following:

Under all circumstances, students must declare all work done by others by completing this form before the review. Provide a detailed explanation of the third party's identity (name and relationship to the student), when and how they were utilized, and the specific tasks they performed in the project.

Student's Name: _____ Date: _____

Signature: _____

Tutor's Name: _____ Date: _____

Signature: _____

Grade	Descriptor	Criteria	Points
A	Excellent	Comprehensively excellent performance on all aspects of the design intention, development, technical resolution and presentation. Achieving all learning outcomes with distinction.	4
A-	Very Good	Generally outstanding performance on the design intention, development, technical resolution and presentation. Achieving all learning outcomes with merit.	3.7
B+	Good	Substantial performance on the design intention, development, technical resolution and presentation. Achieving all learning outcomes satisfactorily.	3.3
B			3
B-			2.7
C+	Fair	Fair performance on the design intention, development, technical resolution and presentation. Achieving all learning outcomes at a passing standard.	2.3
C			2
C-			1.7
D+	Pass	Barely satisfactory performance on the design intention, development, technical resolution and presentation. Achieving all learning outcomes at a barely satisfactory standard.	1.3
D			1
F	Failure	Unsatisfactory performance on the design intention, development, technical resolution and presentation. Not achieving all learning outcomes.	0

Written Feedback to Students

Term: _____ **Grade:** _____

Course: _____ Date: _____

Assignment: _____ Student Name: _____

Studio Tutor: _____ Student ID: _____

Feedback from Studio Tutor:

Achievements:

Challenges: